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DUNSTON, JENNIFER ANN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/505,328	KIM ET AL.	
	Examiner	Art Unit	
	Jennifer Dunston	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,7 and 8* is/are rejected.

7)☒ Claim(s) *2,4 and 6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 August 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/23/2004; 1/9/2006; 7/7/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: Appendix I; Biological Deposit Attachment.

DETAILED ACTION

Claims 1-8 are pending in the instant application.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt of the certified copy of the foreign priority document, Korea 2002/9647, is acknowledged. These papers have been placed of record in the file.

Information Disclosure Statement

Receipt of information disclosure statements, filed on 8/23/2004, 1/9/2006 and 7/7/2006, is acknowledged. The signed and initialed PTO 1449s have been mailed with this action.

A copy of the Yoon et al reference, cited as reference C3 on the IDS filed 1/9/2006, was not provided by Applicant. The Examiner has obtained a copy of the reference and has cited the reference on form PTO 892 mailed herewith.

Specification

The disclosure is objected to because of the following informalities:

1. Pages 13, 15 and 16 contain typographical errors in the 5-prime (5') and 3-prime (3') designations of the recited nucleic acid sequences.

2. Pages 15 and 16 recite nucleic acid sequences that are not referred to by the use of a sequence identifier. Where the description or claims of a patent application discuss a sequence that is set forth in the Sequence Listing, reference must be made to the sequence by use of the

sequence identifier, preceded by "SEQ ID NO:" in the text of the description or claims, even if the sequence is also embedded in the text of the description or claims of the patent application. It would be remedial to amend the specification to indicate that the sequences recited on pages 15-16 are SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, and SEQ ID NO: 13, respectively.

3. At page 16, line 7 the term "Qiaquick" is misspelled.

4. At page 16, line 11, the term "GenBank" is misspelled.

Appropriate correction is required.

The use of the trademarks HYBOND (page 15, line 9); QIAQUICK (page 16, line 7); GENBANK (page 16, line 11) has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

Claims 1 and 3 are objected to because of the following informalities: abbreviations should be spelled out at their first occurrence in the claim set, followed by the abbreviation in parenthesis. For claim 1, Km^R and GFP should be spelled out as "kanamycin resistance (Km^R)" and "green fluorescent protein (GFP)," respectively. For claim 3, Cm^R should be spelled out as "chloramphenicol resistance (Cm^R)." Appropriate correction is required.

Claim 6 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim 8 is objected to because of the following informalities: the claim contains numerous grammatical errors. The phrase "to constructing a new mutant containing all chromosomal deletion sites of the above two mutant" should be amended to recite "to construct a new mutant containing all chromosomal deletions sites of the above two mutants." The phrase "already prepare mutant" should be replaced with "already prepared mutant." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is vague and indefinite in that the metes and bounds of the transposon sequence are unclear. The claim requires a loxP site "expressed as SEQ ID NO: 4," a Km^R gene "expressed as SEQ ID NO: 5," and a GFP gene "expressed as SEQ ID NO: 6." The specification uses the term expressed to refer to the transcription and translation of nucleic acid sequences. However, the loxP site is not transcribed. Further, the sequences provided in SEQ ID NOs: 5 and 6 are DNA sequences and not expression products in the form of an RNA or protein

sequence. It would be remedial to amend the claim language to clearly indicate the sequences that are contained within the TnKGloxP transposon. It would be remedial to amend claim 1 to recite, "A transposon comprising the outer end transposase recognition sequence of SEQ ID NO: 3 on one end of the transposon, the reverse-complementary sequence of SEQ ID NO: 3 on the other end of the transposon, the loxP sequence of SEQ ID NO: 4, the kanamycin resistance sequence of SEQ ID NO: 5, and the green fluorescent protein sequence of SEQ ID NO: 6."

Claim 3 is vague and indefinite in that the metes and bounds of the transposon sequence are unclear. The claim requires a loxP site "expressed as SEQ ID NO: 4," and a Cm^R gene "expressed as SEQ ID NO: 7." The specification uses the term expressed to refer to the transcription and translation of nucleic acid sequences. However, the loxP site is not transcribed. Further, the sequences provided in SEQ ID NO: 7 is a DNA sequence and is not an expression product in the form of an RNA or protein sequence. It would be remedial to amend the claim language to clearly indicate the sequences that are contained within the TnCloxP transposon. It would be remedial to amend claim 3 to recite, "A transposon comprising the outer end transposase recognition sequence of SEQ ID NO: 3 on one end of the transposon, the reverse-complementary sequence of SEQ ID NO: 3 on the other end of the transposon, the loxP sequence of SEQ ID NO: 4, and the chloramphenicol resistance sequence of SEQ ID NO: 7."

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 7 and 8 are drawn to or encompass the use of vectors such as pKGloxP, pKKloxP, pMODTM<MCS>, and pTnCloxP.

The application discloses vectors that are encompassed by the definitions for **biological material** set forth in 37 C.F.R. § 1.801. Because it is apparent that this biological material is essential for practicing the claimed invention, it must be obtainable by a reproducible method set forth in the specification or otherwise be known and readily available to the public as detailed in 37 C.F.R. §§ 1.801 through 1.809.

It is unclear whether this biological material is known and readily available to the public or that the written instructions are sufficient to reproducibly construct this biological material from starting materials known and readily available to the public. The specification states that the pTnKGloxP vector was prepared by the steps of (i) amplifying the GFP gene from pGFPuv (Clontech, Palo Alto, CA), (ii) digesting the GFP PCR product with EcoRI restriction enzyme, (iii) inserting the EcoRI fragment into linear pKKloxP as taught by Koob et al (Posfai et al. (first author) Nucleic Acids Research, Vol. 22, No. 12, pages 2392-2398, 1994) (e.g., page 12, lines 14-22). However, the Koob et al reference does not appear to teach a pKKloxP vector. It is unclear what the sequence of this vector is such that one could perform the step of "inserting GFP gene into a linear pKKloxP vector having Km^R and loxP using ligase." The specification indicates that pMODTM<MCS> was obtained from Epicentre Technologies (Madison, WI)

(e.g., paragraph bridging pages 12-13). The specification states that the pTnCloxP vector was prepared by (i) separating 1.2 kb sized DNA NotI/BamHI fragment having Cm^R and loxP from pKCloxP; and (ii) inserting the fragment into pMODTM<MCS> digested with BamHI (e.g., page 13, lines 4-12).

Accordingly, availability of such biological material is deemed necessary to satisfy the enablement provisions of 35 U.S.C. § 112. If this biological material is not obtainable or available, the requirements of 35 U.S.C. § 112 may be satisfied by a deposit of the biological material. In order for a deposit to meet all criteria set forth in 37 C.F.R. §§ 1.801-1.809, applicants or assignee must provide assurance of compliance with provisions of 37 C.F.R. §§ 1.801-1.809, in the form of a declaration or applicant's representative must provide a statement. The content of such a declaration or statement is suggested by the enclosed attachment. Because such deposit will not have been made prior to the effective filing date of the instant application, applicant is required to submit a verified statement from a person in a position to corroborate the fact, which states that the biological material which has been deposited is the biological material specifically identified in the application as filed (37 C.F.R. § 1.804). Such a statement need not be verified if the person is an agent or attorney registered to practice before the Office. Applicant is also reminded that the specification must contain reference to the deposit, including deposit (accession) number, date of deposit, name and address of the depository, and the complete taxonomic description. A statement that all restrictions on the availability to the public of the material so deposited will be irrevocably removed upon granting of a patent is also required.

The claims require the p**KG**loxP vector to comprise a Cm^R gene; however the specification teaches that the pKGloxP vector comprises a Km^R gene (e.g., page 12, lines 14-22). The p**KC**loxP vector contains the Cm^R gene (page 13, lines 4-12).

This rejection may be overcome by amending claim 7 to recite, "The method for constructing novel strains of claim 5, wherein the first of the two transposons comprises the sequence of SEQ ID NO: 1, and the second of the two transposons comprises the sequence of SEQ ID NO: 2."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al (Genetic Analysis: Biomolecular Engineering, Vol. 14, pages 89-95, 1998; see the entire

reference) in view of Bloch et al (Biochemical and Biophysical Research Communications, Vol. 223, pages 104-111, 1996; see the entire reference).

Yoon et al teach a method comprising the steps of (i) preparing plasmids pKClox and pKKlox, where each plasmid comprises a loxP site and different selectable markers (chloramphenicol resistance and kanamycin resistance); (ii) inserting the plasmids into known positions of different *E. coli* chromosomes by homologous recombination and determining that the plasmid has inserted in a particular orientation; (iii) integrating the two *E. coli* chromosomes by P1 phage transduction to position the two integrated plasmids comprising different selectable markers on one chromosome; and (iv) deleting a chromosomal site between the two loxP sites by expressing Cre gene through a Cre expression vector previously introduced into the *E. coli* cell (e.g., page 90, sections 2.1-2.4; pages 90-92, section 3.1, page 92, section 3.2; Figure 3). Yoon et al teach the application of the method for the generation of chromosomal deletions (e.g., paragraph bridging pages 94-95).

Yoon et al do not teach the method where the loxP sites and different selectable markers are present in two transposons comprising outer end transposase recognition sequences, and the random insertion of the transposons into the chromosomes.

Bloch et al teach a method comprising (i) producing transposable elements comprising Tn10 outer end transposase recognition sequences, an I-*Sce*I site and different selectable markers; (ii) inserting the transposons into random positions of different *E. coli* chromosomes and determining each inserted site; (iii) generating double insertion mutants by P1 phage transduction to position two transposons comprising different selectable markers on one chromosome; and (iv) deleting a chromosomal site between the two I-*Sce*I sites by digestion of

isolated genomic DNA with I-*Sce*I (e.g., pages 104-105, Materials and Methods; page 105-106, Results and Discussion). Bloch et al teach that the procedure is easier to apply than PCR when flanking insertions are more readily obtained than flanking sequences (e.g., page 111, 1st paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of making chromosomal deletions of Yoon et al to include the LoxP site and selectable marker on a Tn10 transposon as taught by Bloch et al because Bloch et al teach it is within the ordinary skill in the art to use a Tn10 transposon to insert sites for manipulation of the *E. coli* genome. The method of Yoon et al requires the insertion of LoxP sites into the *E. coli* genome.

One would have been motivated to make such a modification in order to receive the expected benefit of being able to generate many more insertion mutants of *E. coli* without having to know the flanking sequence by using transposon mutagenesis as taught by Bloch et al. The method of Yoon et al requires the isolation of flanking sequence and homologous targeting for each LoxP insertion. Bloch et al teach that transformation of *E. coli* with the transposons results in numerous insertion sites that can be mapped (e.g., Table 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Tn10 transposons each comprising a LoxP site and a different selectable marker in the method of Yoon et al in order to generate many more deletions in a shorter amount of time. Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent any evidence to the contrary, there would have been a reasonable expectation of success to result in the claimed invention.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al (Genetic Analysis: Biomolecular Engineering, Vol. 14, pages 89-95, 1998; see the entire reference) in view of Bloch et al (Biochemical and Biophysical Research Communications, Vol. 223, pages 104-111, 1996; see the entire reference) as applied to claim 5 above, and further in view of Koob et al (Annals of the New York Academy of Sciences, Vol. 745, pages 1-3, 1994, cited as reference C8 on the IDS filed 1/9/2006; see the entire reference).

The combined teachings of Yoon et al and Bloch et al are described above and applied as before.

Yoon et al and Bloch et al do not teach the method further comprising selecting two mutants from the mutants containing a deletion of a specific chromosomal site, and performing P1 phage transduction using one of the selected mutants as a donor and the other as a recipient, and repeating the process to reduce the chromosome of the obtained mutant by degrees.

Koob et al provide a motivation and strategy for minimizing the *E. coli* genome (e.g., page 1). Koob et al teach introducing single deletions into the original strain and sequentially into a cumulatively deleted strain (e.g., paragraph bridging pages 2-3). Further, Koob et al teach the random deletion of *E. coli* using transposon-induced deletions and subsequent mapping of the deletions (e.g., page 3, 1st full paragraph). Koob et al teach that the goal is to identify the dispensable regions of the genome and provide a guide for deriving a fully characterized minimized strain of *E. coli* (e.g., page 3, 1st full paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined teachings of Yoon et al and Bloch et al to include the step of

combining the deletions as taught by Koob et al because Koob et al teach it is within the ordinary skill in the art to combine deletions generated by homologous recombination or transposon-mediated deletion and Yoon et al teach the method of phage P1 transduction to combine elements separately contained on *E. coli* chromosomes. Thus, it would have been obvious to one of ordinary skill in the art to combine the deletions of the transposon mutagenesis procedure of Yoon et al and Bloch et al to minimize the genome via phage P1 transduction of separately made deletion mutants.

One would have been motivated to make such a modification in order to receive the expected benefit of minimizing the *E. coli* genome to identify dispensable regions as taught by Koob et al. Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent any evidence to the contrary, there would have been a reasonable expectation of success to result in the claimed invention.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al (Genetic Analysis: Biomolecular Engineering, Vol. 14, pages 89-95, 1998; see the entire reference) in view of Bloch et al (Biochemical and Biophysical Research Communications, Vol. 223, pages 104-111, 1996; see the entire reference) as applied to claim 5 above, and further in view of Reznikoff et al (WO 98/10077; see the entire reference), Kilbride et al (Journal of Molecular Biology, Vol. 289, pages 1219-1230, 1999; see the entire reference), and Borges et al (WO 01/18222; see the entire reference).

The combined teachings of Yoon et al and Bloch et al are described above and applied as before. The combined teachings of Yoon et al and Bloch et al result in the provision of a

transposon characterized in comprising an outer end transposase recognition sequence having a base sequence of a Tn10 transposon on one end, its reverse-complementary sequence on the other end, a loxP site, and a chloramphenicol resistance (Cm^R) gene.

Yoon et al and Bloch et al do not teach the transposon where the outer end transposase recognition sequence has a base sequence of SEQ ID NO: 3, the lox P site has a sequence of SEQ ID NO: 4, and the Cm^R gene has a sequence of SEQ ID NO: 7.

Reznikoff et al teach a system for transposition that includes a transposable element flanked by a pair of bacterial transposon Tn5 outside end repeat sequences, and a modified Tn5 transposase having higher binding avidity to the outside end repeat sequences and being less likely to assume an inactive multimer form than wild type Tn5 transposase (e.g., Abstract; paragraph bridging pages 8-9). Reznikoff et al teach that the system can be used to make defective mutants (e.g., page 4, lines 31-40). Further, Reznikoff et al teach that the Tn5 transposon is capable of introducing changes into any target DNA and has few, if any, preferences for insertion sites (e.g., page 6, lines 29-40). Reznikoff et al teach that the wild type Tn5 outer end sequence is 5'-CTGACTCTTATACACAAGT-3'; however, transposition frequency is known to be increased when the nucleotide at position 4 is a T (e.g., page 13, lines 26-41). Reznikoff et al teach an outer end sequence that is identical to the sequence of instant SEQ ID NO: 3 (e.g., SEQ ID NO: 8 shown on page 14). Reznikoff et al teach that the sequence of SEQ ID NO: 8 (instant SEQ ID NO: 3) is a desirable hyperactive mutant (e.g., page 14). Moreover, Reznikoff et al teach that the transposon containing the disclosed outer end sequences can be used to introduce a site for cre-lox recombination (e.g., page 16, lines 33-40).

Kilbride et al teach that the bacteriophage P1 Cre recombinase acts on a 34 bp LoxP site (e.g., page 1219, paragraph bridging columns). Kilbride et al teach the LoxP sequence of instant SEQ ID NO: 4 (e.g., page 1228, Plasmids and DNA).

Borges et al teach a chloramphenicol resistance gene (e.g., page 4, lines 4-10; paragraph bridging pages 11-12). Borges et al teach a nucleic acid comprising the chloramphenicol resistance gene (e.g., page 5, lines 12-19; page 8, lines 27-32). Specifically, Borges et al teach targeting vectors comprising the chloramphenicol resistance gene (e.g., page 14, lines 3-10). Borges et al teach the use of the chloramphenicol resistance gene identical to instant SEQ ID NO: 7 (e.g., SEQ ID NO: 3). See the attached alignment in Appendix I.

Because Yoon et al and Bloch et al teach the provision of a transposon characterized in comprising an outer end transposase recognition sequence having a base sequence of a Tn10 transposon on one end, its reverse-complementary sequence on the other end, a loxP site, and a chloramphenicol resistance (Cm^R) gene, it would have been within the ordinary skill of the art at the time the invention was made for one to use specific known sequences for each of the elements. Thus, it would have been obvious to one of ordinary skill in the art to use the sequence of Kilbride et al as the LoxP sequence and the sequence of Borges et al as the Cm^R sequence in order to achieve the predictable result of providing known sequences to confer the known functions.

With regard to the outer end sequence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined teachings of Yoon et al and Bloch et al to include the Tn5 outer end sequence taught by Reznikoff et al because Bloch et al teach it is within the ordinary skill in the art to use a transposon sequence for random

integration of desired sequence and Reznikoff et al teach the use of the Tn5 sequence for the same purpose. Further, Reznikoff et al teach it is within the skill of the art to use the Tn5 sequences in combination with a sequence for cre-lox recombination.

One would have been motivated to replace the Tn10 outer end sequences with the Tn5 outer end sequences in order to receive the expected benefit of providing outer end sequence that provides for more efficient integration of the transposon as taught by Reznikoff et al. Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent any evidence to the contrary, there would have been a reasonable expectation of success to result in the claimed invention.

Conclusion

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form as "A transposon comprising the sequence of SEQ ID NO: 1."

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form as "A transposon comprising the sequence of SEQ ID NO: 2."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Dunston whose telephone number is 571-272-2916. The examiner can normally be reached on M-F, 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached at 571-272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer Dunston/
Examiner
Art Unit 1636